VOLUME CONTENTS

CONTENTS VOL. 73 NO. 1 1992

J. Lützen and Å. Jespersen. A study of the morphology and biology of *Thompsonia littoralis* (Crustacea: Cirripedia: Rhizocephala) 1

Å. Franzén and M. Ferraguti. Ultrastructure of spermatozoa and spermatids in *Bonellia viridis* and *Hamingia arctica* (Echiura) with some phylogenetic considerations 25

O. Munk. Accessory escal gland (AEG) in some deep-sea anglerfishes 33

C. J. Pfeiffer. Intestinal ultrastructure of *Nerita picea* (Mollusca: Gastropoda), an intertidal marine snail of Hawaii 39

Young Hwan Lee and Ae Sook Kwon. Ultrastructure of spermiogenesis in *Hyla japonica* (Anura, Amphibia) 49

I. Schinko, I. C. Potter, U. Welsch and P. Debbage. Structure and development of the notochord 'elastica externa' and nearby components of the elastic fibre system of agnathans 57

K. Tsuneki. A systematic survey of the occurrence of the hypothalamic saccus vasculosus in teleost fish 67

CONTENTS VOL. 73 NO. 2 1992

J. M. Jørgensen. The electrosensory cells of the ampullary organ of the transparent catfish (*Kryptopterus bicirrhus*) 79

P. Burkhardt-Holm and S. Holmgren. A study of the alimentary canal of the brachyopterygian fish *Polypterus senegalus* with electron microscopy and immunohistochemistry 85

N. A. Watson, J. B. Williams and K. Rohde. Ultrastructure and development of the eyes of larval *Kronborgia isopodicola* (Platyhelminthes, Fecampiidae) 95

A. Chiba, T. Kon and Y. Honma. Ultrastructure of the spermatozoa and spermatophores of the zuwai crab, *Chionoecetes opilio* (Majidae, Brachyura) 103

R. Dallai, P. L. Bellon, S. Lanzavecchia and B. A. Afzelius. Sperm axoneme in some apterygote insects examined by computer-aided image analysis 109

W. E. Bemis and R. G. Northcutt. Skin and blood vessels of the snout of the Australian lungfish, *Neoceratodus forsteri*, and their significance for interpreting the cosmine of Devonian lungfishes 115

CONTENTS VOL. 73 NO. 3 1992

G. W. Rouse. Ultrastructure of the spermathecae of *Parafabricia ventricingulata* and three species of *Oriopsis* (Polychaeta: Sabellidae) 141

A. M. N. Kalantan, M. Arfin and M. S. Alyousif. Chemical nature and mode of stabilization of egg-shell in *Helicometra pulchella* (Rudolphi, 1819) (Digenea: Opecoelidae) 153

L. Alibardi. Glial cell composition and ultrastructure of the caudal spinal cord of young and adult tuataras, *Sphenodon punctatus* 157

A. B. Tzetlin, G. Purschke, W. Westheide and M. V. Saphonov. Ultrastructure of enteronephridia and general description of the alimentary canal in *Trochonerilla mobilis* and *Nerillidium troglochaetoides* (Polychaeta, Nerillidae) 163

CONTENTS VOL. 73 NO. 3 1992 (Continued)

G. Zaccone, J. M. Lauweryns, S. Fasulo, G. Tagliafierro, L. Ainis and A. Licata. Immunocytochemical localization of serotonin and neuropeptides in the neuro-endocrine paraneurons of teleost and lungfish gills 177

M. Nebelsick. Sensory spots of *Echinoderes capitatus* (Zelinka, 1928) (Kinorhyncha, Cyclorhagida) 185

W. Westheide and C. Watson Russell. Ultrastructure of chrysopetalid paleal chaetae (Annelida, Polychaeta) 197

CONTENTS VOL. 73 NO. 4 1992

F. Marmo, A. P. Ariani, G. Balsamo and B. Avallone. Scanning electron microscopy and X-ray diffraction studies of the macular crystals in the chondrostean fish *Erpetoichthys calabaricus* (Smith) 203

M. C. Thorndyke, B. D. Crawford and R. D. Burke. Localization of a SALMFamide neuropeptide in the larval nervous sytem of the sand dollar *Dendraster excentricus* 207

M. S. Y. Lee and B. G. M. Jamieson. The ultrastructure of the spermatozoa of three species of myobatrachid frogs (Anura, Amphibia) with phylogenetic considerations 213

A. C. Durán, V. Sans-Coma, J. M. Arqué, M. Cardo, B. Fernández and D. Franco. Blood supply to the interventricular septum of the heart in rodents with intramyocardial coronary arteries 223

K. Rohde and N. A. Watson. Ultrastructure of the flame bulbs and protonephridial capillaries of *Artioposthia* sp. (Platyhelminthes, Tricladida, Geoplanidae) 231

G. Lambert. Ultrastructural aspects of spicule formation in the solitary ascidian *Herdmania momus* (Urochordata, Ascidiacea) 237

T. G. Langecker and H. Wilkens. Comparative ultrastructural studies on the pineal organ of the Mexican catfish *Rhamdia laticauda* Heckel, 1858 and one of its cave-dwelling derivates (Pimelodidae, Teleostei) 247

M. M. Antoniazzi and M. Silveira. Pharyngeal and gastrodermal ultrastructure of *Prorhynchus stagnalis* Schultze, 1851 (Turbellaria, Lecithoepitheliata) 255

P. D. Reynolds. Distribution and ultrastructure of ciliated sensory receptors in the posterior mantle epithelium of *Dentalium rectius* (Mollusca, Scaphopoda) 263

CONTENTS VOL. 73 NO. 5 1992

E. Dahl and J.-O. Strömberg. Introduction: discovering crustacean diversity 271

G. Fryer. The origin of the Crustacea 273

J. Bergström. The oldest arthropods and the origin of the Crustacea 287

D. E. G. Briggs. Phylogenetic significance of the Burgess Shale crustacean *Canadaspis* 293

W. D. I. Rolfe. Not yet proven Crustacea: the Thylacocephala 301

D. Walossek and K. J. Müller. The 'alum shale window'—contribution of 'Orsten' arthropods to the phylogeny of Crustacea 305

W. D. I. Rolfe. Discussion following Walossek & Müller 313

R. R. Hessler. Reflections on the phylogenetic position of the Cephalocarida 315

W. D. I. Rolfe. Synopsis of main points arising from discussion on 'Crustacean evolution and the significance of early fossils'. Chairman: D. E. G. Briggs 317

CONTENTS VOL. 73 NO. 5 1992 (Continued)

W. A. Newman. Origin of Maxillopoda 319

J. T. Høeg. The phylogenetic position of the Rhizocephala: are they truly barnacles? 323

G. A. Boxshall and R. Huys. A homage to homology: patterns of copepod evolution 327

G. A. Boxshall. Synopsis of group discussion on the Maxillopoda. Co-chairmen: W. A. Newman & G. A. Boxshall 335

E. Dahl. Aspects of malacostracan evolution 339

J. W. Wägele. Synopsis of discussion on 'Relationships between malacostracan groups and reconstructions of the ur-malacostracan'. Chairman: Les Watling 347

L. Watling. Holistic pattern analysis as an alternative to pattern cladistics in hypothesizing crustacean phylogenetic sequences 349

J. W. Wägele. Co-evolution between fishes and crustaceans 355

J. W. Martin and M. S. Laverack. On the distribution of the crustacean dorsal organ 357

R. Elofsson. To the question of eyes in primitive crustaceans 369

L. G. Abele, T. Spears, W. Kim and M. Applegate. Phylogeny of selected maxillopodan and other crustacean taxa based on 18S ribosomal nucleotide sequences: a preliminary analysis 373

G. D. F. Wilson. Computerized analysis of crustacean relationships 383

G. A. Boxshall and J.-O. Strömberg. Postscript: a commentary on the results of the workshop 391

Volume Contents and Author Index Volume 73, 1992 i